NATIONAL DEFENSE UNIVERSITY

NATIONAL WAR COLLEGE

STATE DEPARTMENT ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM) POLICY: A NOD TO NON-PROLIFERATION

NELSON CABOT, JR.

COURSE 5603
THE NATIONAL SECURITY STRATEGY PROCESS

PROFESSOR

FRANK YOUNG

ADVISOR

COL GARY WEST

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
2003		**00-00-2003 to 00-00-2003**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
State Department Advanced Medium Range Air-to-Air Missile (AMRAAM) Policy: A Nod to Non-Proliferation	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **National War College,300 5th Avenue,Fort Lesley J. McNair,Washington,DC,20319-6000**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES
The original document contains color images.

14. ABSTRACT
see report

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**		**14**	

AMRAAM EXPORT POLICY

Thesis

Since the mid-1990s the State Department has restricted the export of the Advanced Medium Range Air-to-Air Missile (AMRAAM) in regions where a like capability has yet to be introduced. The policy was conceived as an attempt to foster regional stability in regions where the proliferation of advanced weaponry may lead to the start of a local arms race. Competing objectives included furthering U.S. regional influence and the amelioration of concerns over a decreasing domestic industrial base. The policy was implemented without adequate consideration of restricting other types of advanced weaponry or the ramifications to U.S. policies in both the international and domestic environments. Though a laudable objective, the AMRAAM was a poor choice of means to achieve that end during a period of increasing administration emphasis to export advanced weaponry throughout the world.

AMRAAM Description

The AMRAAM is an advanced air-to-air missile designed to replace the AIM-7 Sparrow in the U.S. inventory. Unlike the AIM-7, the AMRAAM has its own on board radar that allows it to acquire and engage a target without constant monitoring by the launch aircraft. Once fired at a target the launch aircraft guides the AMRAAM to a predetermined point using a data link to provide guidance commands, at which point the onboard AMRAAM radar acquires the target and the missile then calculates its own guidance commands. The AMRAAM allows one aircraft to engage multiple targets at significant standoff ranges, in contrast to the AIM-7, which required the launch aircraft to supply guidance commands to the missile for the entire time of flight of the missile.[1]

The AMRAAM design used improved electronics and mechanical systems compared to the AIM-7, giving the missile improved reliability and maintainability and decreasing the costs of ownership. The improved electronics and software allowed the AMRAAM to have a rapid reprogramming capability, affording relatively easy upgrades to the software when updates came available. The AMRAAM became operational with U.S. forces around 1990, and was exported to friends and allies quickly thereafter.[2]

The AMRAAM Policy

The April 2001 edition of the Arms Trade News outlined the U.S. AMRAAM export policy as it related to a proposed sale to Chile of 10 F-16 fighter aircraft worth roughly $700 million. In a letter to Sen. Christopher Dodd, Deputy Secretary of State Richard Armitage said that "…the U.S. is "prepared to sell" Advanced Medium Range Air-to-Air Missiles to Chile, but would not transfer them until similar capabilities are introduced in the region." The letter went on to say, "…since 1997 the U.S. has maintained "a policy of restraint" to not transfer active radar-guided, beyond visual range air-to-air missiles to a country in a region where such a capability does not already exist."[3]

Policy Objectives

The stated objective of the AMRAAM export policy was to foster regional stability in areas that may be prone to local arms races.[4]

Domestic Environment

The policy was formulated during a period when the U.S. was grappling with declining force structure coupled with spending limits that strained acquisition budgets. The DoD fighter fleet was aging faster than the next generation of fighters was planned to come on the scene and there was a potential shortfall of airframes compared to the force structure required by the 1993

Bottom Up Review[5]. During this same timeframe the USAF, for the first time since WWII, submitted a budget without funding for procurement of a single fighter aircraft. These events created a great concern in DoD that the U.S. aviation industrial base would atrophy to a point that the cost of recovery would be prohibitive. The pressure to buttress industrial capacity without increasing DoD spending led to an increased emphasis to export U.S. combat aircraft.

At the same time, there was competing pressure from other areas in the executive branch to restrict export of advanced weaponry in keeping with the intent of the Arms Export Control Act (AECA). Chapter 1, Section 1 of the AECA states "…As declared by the Congress in the Arms Control and Disarmament Act, an ultimate goal of the United States continues to be a world which is free from the scourge of war and the dangers and burdens of armaments…In furtherance of that goal, it remains the policy of the United States to encourage regional arms control and disarmament agreements and to discourage arms races."[6] It further states that "…It is the sense of the Congress that the President maintain adherence to a policy of restraint in conventional arms transfers and that, in implementing this policy worldwide, a balanced approach should be taken and full regard given to the security interests of the United States in all regions of the world and that particular attention should be paid to controlling the flow of conventional arms to the nations of the developing world."[7]

International Environment

Other arms producing countries were facing concerns similar to those in the U.S. Declining defense budgets in those countries threatened their military industrial capabilities, and they were also turning to the world export market as a means to ensure continued survival of their industry. The result was an extremely competitive market place, with ever increasing

pressure on all the players to export state of the art capability to regions not previously equipped with such sophisticated weaponry.

Opportunities, Risks and Costs

The demise of the Soviet Union coupled with the needs of several countries to replace their own aging fighter fleets gave the U.S. a unique opportunity to gain influence through security assistance programs in areas previously ignored or inaccessible. Those markets included several countries in the Middle East, South America and Southeast Asia. The U.S. was, and remains, actively engaged in competition with foreign aircraft manufacturers in those markets. The same factors gave the State Department, as the responsible executive agent for control of arms exports[8], an opportunity to restrict some exports in an effort to achieve a measure of regional stability in South America and portions of Asia. The risk of a total regional ban on weapons exports was loss of potential U.S. influence in those areas, and further erosion of the U.S. industrial base.

Given the opposing pressures to export arms while discouraging regional arms races, State began searching for a type of weapon or weapon system that would produce the desired end state of regional stability while still allowing export of high value weapon systems. With foreign weapons manufactures marketing combat aircraft comparable to the U.S. offerings, but without a fielded capability comparable to AMRAAM, the AMRAAM appeared a logical candidate for export control. State considered the offensive capability of AMRAAM, the relative expense of the weapon compared to offerings of less capable types of air-to-air missiles and the fact that AMRAAM was an exclusive capability of the U.S. at the time. They felt that introduction of AMRAAM into a region without an existing comparable capability, specifically South America

and portions of Asia, could have a destabilizing influence, and the export restriction of AMRAAM was chosen as the way to achieve the end.[9]

Policy Implementation

Issues

Several issues needed to be resolved as the U.S. began implementation of the AMRAAM export policy. First, was the question of how to deal with an apparent disconnect in rationale. The policy restricted the export of AMRAAM, but allowed continued export of the AIM-7 Sparrow, which like the AMRAAM is a beyond visual range air-to-air missile. The AIM-7 although not as capable a weapon as the AMRAAM, has the same potential for offensive employment and is also relatively expensive to procure and maintain. Add to that the fact that the U.S. had at that time already exported AMRAAM to several other countries in the world and it appeared to the international audience as though we were being dismissive of what other countries felt as legitimate security concerns. Adding fuel to that fire was the willingness of the international competition to supply their own versions of an AMRAAM like weapon with their fighter offerings, ostensibly without preconditions. In some specific cases, potential customers emphasized their desire for AMRAAM to the point of not considering a U.S. offering if AMRAAM wasn't included.

Next, even though the AMRAAM is independent of a specific aircraft, there are intertwining issues between the aircraft and the weapon. Of immediate concern was whether it was permissible to export the aircraft software required to operate the AMRAAM. Given the international competition, countries interested in U.S. combat aircraft were increasingly asking for state of the art capability, and specifically in the case of the USAF, the latest models of the F-16. Removal of AMRAAM specific software from the F-16 was expensive, and creation of

software to operate a different type of air-to-air missile (i.e. the AIM-7) in the latest versions of the F-16 was even more expensive. Even if a customer or the contractor was willing to pay the price for the new software, the phase out of the AIM-7 from the U.S. inventory meant that neither the DoD nor the contractor could guarantee continued support of the missile.

Third, the State AMRAAM policy implied a willingness to transfer AMRAAM to a country if a like capability was introduced in the region. However, the manufacturing lead-time required for delivery of missiles after an order is placed is in excess of two years. That led to a concern about a country being placed in a potentially compromising position in their region for a significant time after introduction of a like capability. Even if the missiles were available for immediate transfer to a country in need, that country would require a significant amount of training time before their pilots could employ them effectively and they would remain potentially vulnerable.

Finally, the policy had a potentially deleterious effect on the U.S. warfighter. The U.S. acquisition strategy was based on the export of AMRAAM as a means of reducing cost to the U.S. taxpayer. As the export market became more competitive and defense budgets around the world shrank, the AMRAAM export policy was forcing the price of U.S. procured AMRAAMs higher and resulting in smaller quantities available to the DoD due to the fixed budget available.

Policy Adjustment

As the policy was reviewed and implemented, the affected agencies weighed the risks, costs and opportunities and arrived at the compromise outlined in the Arms Trade News. Specifically, the U.S. would be "…'prepared to sell' Advanced Medium Range Air-to-Air Missiles…but would not transfer them until similar capabilities are introduced in the region."[10] This compromise alleviated a majority of the concerns about the policy, allowing the U.S. to

offer AMRAAM as part of a total package, allowing the buying countries to train with the weapon and expect it to be available if and when they needed it for their national security.

Analysis

The normal interagency process for approval of arms exports includes coordination and concurrence through various agencies in DoD, specifically the Defense Security Cooperation Agency, the Defense Technology Security Administration (formerly the Defense Threat Reduction Agency), and the affected services[11]. The creation of the AMRAAM policy appears to have been done within the confines of the State Department, perhaps at the whim of a single principle at State.[12] It was surely done without the benefit of input through the formalized process, and suffered from flaws that may have been avoided by using the process.

Although the rationale State used to defend the choice of AMRAAM as a means to achieve the policy objective is true as stated, it doesn't seem as though the policy makers had a full appreciation of the role of AMRAAM. It can be used as an offensive weapon, but it also has a significant impact in a purely defensive role. Particularly in a homeland defense scenario where the defending force could be outnumbered by the attackers, the capability for one aircraft to simultaneously engage more than one enemy fighter provides a very robust defensive capability. AMRAAM in that context is a credible deterrent, providing a potentially stabilizing vice destabilizing influence in a region.

From a capability standpoint State again had it right, but only to a point. AMRAAM is indeed a better missile than the AIM-7 that it replaced in the U.S. inventory. It is more lethal, has a larger realm in which it can be employed, is easier for a pilot to employ and is easier to store and maintain. It was also more expensive per missile than the AIM-7 was at the time. However the policy didn't take into account the rest of the story. The integration and support of

the AIM-7 on the variants of the F-16 that were competitive would have added significant cost to the total price. Also, since the AIM-7 was being phased out of the U.S. inventory, the future support of the missile would have to be borne entirely by a small number of countries possessing a small number of weapons, a situation that also would have added significant cost to the total price of ownership. Without AMRAAM and with the AIM-7 fiscally unrealistic, the U.S. alternative was to not offer any beyond visual range missile with our combat aircraft, leaving the country at question decidedly vulnerable in the air-to-air environment. That vulnerability was at the very least an unattractive alternative to a country paying hundreds of millions of dollars for state of the art fighter aircraft that, in their eyes, the U.S. was more than happy to sell but not allow them to protect.

The final point missed by the policy is perhaps the most obvious, the fact that AMRAAM is an air-to-air weapon. Power projection through the employment of air-to-ground capability is what truly makes air power significant. Regional destabilization is more likely if a country possesses a unique air-to-ground capacity that significantly increases the risks to a neighboring country while reducing the potential cost of use to an aggressor. Examples include cruise missiles, laser guided munitions and munitions guided by the Global Positioning System.

Alternatives

During the timeframe State developed the AMRAAM policy, there were air-to-ground systems they may have considered for restricted export as an alternative to AMRAAM. Using the criteria of a capability unique to the U.S., one such system was Longshot, developed and marketed internationally by a small U.S. company.

Longshot is not a weapon per se, but is a GPS guidance and wing kit that attaches to an existing weapon. It is capable of being used on virtually any weapon that weighs 1000 pounds or

less and transforms the weapon into a standoff glide bomb capable of being reprogrammed in flight. It uses the GPS signal to guide the bomb to the target, giving a dramatic improvement in accuracy to a previously "dumb" bomb. It also provides increased survivability to the launch aircraft by allowing it to employ the weapon outside of the range of potential defensive systems. This translates into "…the ability to attack from an altitude of 30,000 feet and hit a point target more than 40 miles away with an accuracy of better than 15 meters."[13] The truly unique aspect of this system is the fact that the pilot uses a small device in the cockpit to talk to the weapon through the existing aircraft radios. This technique requires no integration with the aircraft software, saving a customer up to hundreds of millions of dollars of typical integration costs. The lack of integration costs, coupled with the fact that it could be used with existing stockpiles of munitions, makes Longshot very attractive to foreign customers with limited budgets.[14]

The capability of a country to turn its attack posture from one requiring aircraft to get very close to a target (less than five miles) to employ a weapon with questionable accuracy, to one that allows it to stand off (more than 40 miles) with very good accuracy is potentially destabilizing. Considering the stated objective of the State Department AMRAAM policy was regional stability, restricting the export of a capability embodied by a system such as Longshot would have been an excellent choice. Yet the producers of Longshot have been allowed to market their system to countries in the regions targeted by the State AMRAAM policy.

Conclusion

The AMRAAM export policy was conceived as an attempt to foster regional stability and the State Department believes the restriction on the export of the AMRAAM has been relatively successful.[15] The introduction of like capability in South America was not acknowledged until Peru made a public announcement in 2002, five years after implementation of the policy. In

addition, to date, there has been no acknowledgement of a like capability being introduced in Southeast Asia. However, there are foreign competitors to AMRAAM actively marketing in that region, and the continued effectiveness of the policy is questionable. Also, given acquisition lead times, it can be argued that Peru was actively seeking and taking delivery of their missiles during the time State was implementing the policy. In that context, it is equally easy to argue that the policy was unsuccessful.

Competing objectives, included furthering U.S. regional influence and the amelioration of concerns over a decreasing domestic industrial base, made it difficult to choose a means that would achieve the stated objective. Nonetheless, the policy was formulated and promulgated without adequate consideration of restricting other types of advanced weaponry or the ramifications to U.S. policies in both the international and domestic environments. Using a comprehensive interagency process would certainly have made implementation of the existing policy more efficient. Considering the questionable success of the existing policy, better use of the interagency process may have produced a better choice of means and a more lasting solution.

Notes

1 “Missile Systems of the World”, World Missile Systems Database, 2001, http://www.amiinter.com/Missiles_online.html (6 January 2003)

2 “Missile Systems of the World”

3 “State Department Outlines AMRAAM Export Policy”, Arms Trade News, April 2001, http://www.clw.org/atop/atn/atn0401.html (6 January 2003)

4 Dave Quinn, State Department, conversation with the author, 14 January 2003

5 “Forces To Implement The Defense Strategy”, Report on the Bottom-Up Review, October 1993, http://www.fas.org/man/docs/bur/ (6 January 2003)

6 “Chapter 1— Foreign And National Security Policy Objectives And Restraints”, Arms Export Control Act, 1976, http://www.fas.org/asmp/resources/govern/aeca00.pdf (14 January 2003)

7 “Chapter 1— Foreign And National Security Policy Objectives And Restraints”

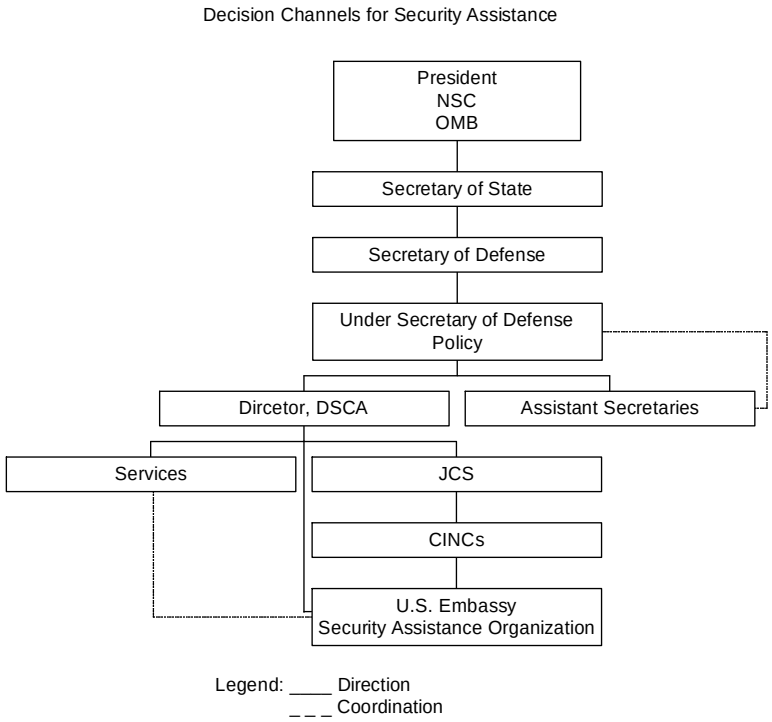
8 “Chapter 1— Foreign And National Security Policy Objectives And Restraints”

9 Dave Quinn

10 “State Department Outlines AMRAAM Export Policy”

11 Security Assistance Management Manual, 5 Feb 2002, http://www.dsca.osd.mil/samm/ (27 January 2003)

The Security Assistance Management Manual identifies the hierarchy of decision-making illustrated in the chart below. In practice, the State Department generally provides all export license requests to the DoD for review. Each element within DoD then decides whether to provide the license request to subordinate agencies for review. Usually, if disagreement exists amongst the various agencies over an export license, there is a meeting of the action officers (up to O-6 level) to attempt resolution. Failing that, the principles have the option of weighing in with their counterparts in DoD and/or State. Inputs from lower agencies may be ignored as the response winds its way through DoD back to the State Department. Ultimately, the State Department has responsibility for export decisions and may ignore any or all input from the DoD.



12 Anonomous source, State Department, conversation with author, 10 January 2003

13 "Longshot", Global Security.Org, 22 December 2002, http://www.globalsecurity.org/military/systems/munitions/longshot.htm (14 January 2003)

14 "Longshot"

15 Dave Quinn

Bibliography

"Chapter 1— Foreign And National Security Policy Objectives And Restraints", Arms Export Control Act, 1976, http://www.fas.org/asmp/resources/govern/aeca00.pdf (14 January 2003)

"Forces To Implement The Defense Strategy", Report on the Bottom-Up Review, October 1993, http://www.fas.org/man/docs/bur/ (6 January 2003)

"Longshot", Global Security.Org, 22 December 2002, http://www.globalsecurity.org/military/systems/munitions/longshot.htm (14 January 2003)

"Missile Systems of the World", World Missile Systems Database, 2001, http://www.amiinter.com/Missiles_online.html (6 January 2003)

"State Department Outlines AMRAAM Export Policy", Arms Trade News, April 2001, http://www.clw.org/atop/atn/atn0401.html (6 January 2003)